

COLOUR LASERS

INTRODUCTION

Colour laser printers have become so affordable that they're now well within the reach of home users. That's great news if you print in colour fairly often and an inkjet is too slow, but if you do a lot of printing you could spend a small fortune on toner. Happily, the price of larger, faster printers has also fallen. A budget of £800 gives you a choice between some surprisingly fast and robust colour laser printers. Designed for serious business use, these can print more pages faster and at a lower cost than simpler printers.

This month, we've looked at nine colour laser printers that cost from just £472 including VAT. Over the next few pages, we'll tell you how easy they are to set up and maintain, how well they can print and, crucially, how much money they could save you over the next few years.

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Give your prints a splash of colour and a dash of class with a laser printer, and save a fortune in running costs. We test nine printers that give you more quality for your cash

LASER SHARP

Choosing a... Colour Laser Printer

If you have a budget of over £450 for a colour laser printer, there's no shortage of choice. So it's important that you know what to look for when making your decision. You may regret paying for features you don't need if they come at the expense of the strong performance you do need. Above all else, consider how often you'll print and what sort of jobs you will need your printer to perform.

Our test results show that you can't always rely on a printer's specifications to give you the full story about its performance. For example, a high print resolution doesn't always result in better print quality. Speed figures can be misleading, too, particularly for complex colour jobs that contain lots of graphics.

LASER'S EDGE

To make a colour page, laser printers create four single-colour images in black, cyan, magenta and yellow. These are overlaid on the paper to make a full-colour image and heated to bond them to the page. All but one of the printers in this test use a single-pass print engine, which creates all four images simultaneously on four separate photoconductor drums. The four-pass engine in Epson's AcuLaser C2600N creates each image in turn using a

single drum, so it takes longer to print colour documents than mono ones.

Single-pass engines may be fast, but they contain more components than four-pass devices and tend to be bigger. All the printers in this test weigh more than 25kg with their consumables installed. Most take up a lot of space and require further room for cooling and access. Make sure you have a suitable surface where the printer's noise and heat won't bother anyone.

SUPPLIES AND DELIGHT

It's important for a busy network printer to spend as much time as possible ready to print. To this end, most workgroup laser printers have a paper cassette that can hold an entire ream of paper. This means the printer needs restocking less frequently.

High-capacity consumables are available for most network printers and help to keep them running with the minimum attention. Most importantly, high-yield supplies reduce waste and help to minimise running costs. The table on page 102 shows running costs calculated in two ways. We work out the cost per page for each printer by dividing the price of each of its consumables by the number of pages it will last and





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adding the sums together. These figures are useful but don't take into account the fact that the supplied consumables give you a period of cost-free printing. For instance, the supplied fuser unit may last for 100,000 pages, and some printers will never print this many pages. Our alternative estimated ownership costs indicate the cost of buying each printer and producing a certain number of pages, taking into account the life of standard supplies.

Remember that running costs become more significant the more you print (see box, right). They are crucial for a network printer, which may deliver thousands of pages a day.

MANUAL LABOUR

Most of the printers in this test arrive with their consumables already installed, but all of them require some preparation before they'll print. This usually involves removing transit locks or packing materials, but some printers require you to fit their consumables or slot in paper trays. The physical weight and bulk of these printers means you'll probably need a second pair of hands to help you lift them and set them up.

If you're familiar with installing network printers, few of the devices here will prove too taxing. That said, we were disappointed that many manufacturers' installation programs failed to detect their printer across our DHCP-enabled Ethernet network. We had to add a TCP/IP print port manually when configuring many of these

printers. This would become a drag if you had to repeat the procedure for every PC in an office.

LANGUAGE BARRIERS

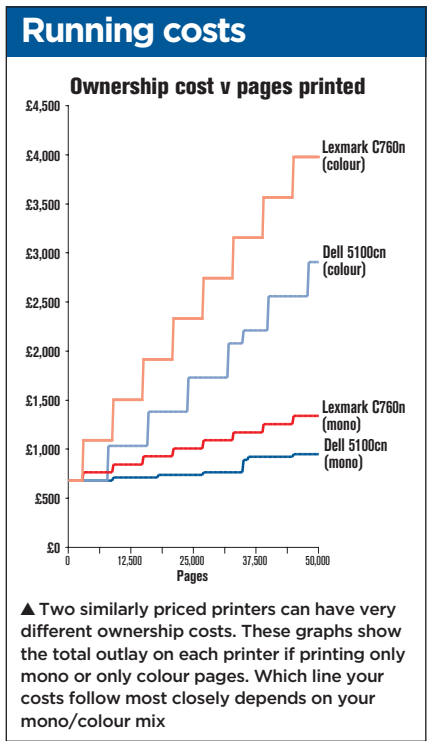
There are two host-based printers in this test. The drivers for these printers create each print job entirely on the host PC and then send detailed instructions over the network to the printer. The other seven printers support at least one version of the Printer Control Language (PCL), and six support the alternative PostScript 3 language.

Using a print language such as PCL or PostScript reduces the amount of work the computer has to do when sending a print job, and cuts the amount of data sent across the network to the printer. This reduces spooling time for most simple jobs, but some printers take longer when processing and printing more complicated documents.

UPGRADE EXPECTATIONS

All the printers in this group have a decent multi-purpose paper feeder and input and output trays that can hold at least 250 sheets of paper. Two include automatic duplex (double-sided) printing as standard, and this is available as a free option for Konica Minolta's Magicolor 5440DL during the firm's spring offer.

It's worth considering how your needs might change and buying a printer that you can upgrade accordingly. Neither Lexmark's C524n or HP's LaserJet 3600n can be upgraded with



duplex printing if you don't buy a duplex version. Three printers in this test can't be upgraded to use a plain paper input of 1,000 sheets or more.



EPSON AcuLaser C2600N

★★★★★

£472 inc VAT



We first reviewed Epson's AcuLaser C2600N in *What's New, Shopper* September 2005. It's available in two versions. The C2600N reviewed here comes with a 5,000-page black toner and 2,000-page colour toners. The 2600N, which costs just a few pounds less, is identical but has no colour toners.

Either version can run with four colour toners or four black toners. With four black toners, the C2600N can print up to 20,000 mono pages without further maintenance.

The C2600N is one of the smaller printers in this group, but its compact four-pass engine leaves room for a full 500-sheet input cassette. The multipurpose tray can hold a further 150 sheets, although the printer creased envelopes even when we fed them in one at a time.

Like the AcuLaser C4100 reviewed on page 100, the C2600N is hard to install. We couldn't get Epson's Easy Install program to detect our notebook's wired Ethernet adaptor, let alone the printer. We resorted to installing the C2600N on a parallel port, creating a TCP/IP port manually and reassigning the printer to it.

Using its PCL driver, the C2600N was fast when printing text documents, and acceptably swift in colour. Our high-resolution photos looked great, with the most accurate colours of the group. Colour business graphics looked fine.

For PostScript printing, we had to add a new printer manually, assign it to the network port we had created and point Windows to the driver on Epson's disk. The C2600N's PostScript performance left us wondering if it was worth the effort. Colour prints looked a little dark and sombre, and mono text often printed with tiny but visible notches on the top or bottom of loops. Twice the printer failed to complete our 50-page test due to a memory overflow error.

VERDICT

The C2600N is hard to install and its PostScript performance is poor, but it's cost effective and robust. Its price has fallen significantly since we last reviewed it and, at under £500, it's great value if you don't need PostScript printing.

SUMMARY

- ✓ Fast, high-quality PCL printing
- ✓ Good paper handling and running costs
- ✗ Slow, unimpressive PostScript printing

COLOUR LASER PRINTER 600x600dpi, 30ppm mono/7.5ppm colour maximum speed, parallel, USB Hi-Speed and 10/100 Ethernet interfaces
PART CODE C11C585001DA
SUPPLIER www.savastore.com DETAILS www.epson.co.uk



LEXMARK C524n

★★★★

£482 inc VAT

Lexmark's C524n colour laser printer is similar to the C522n we reviewed in *Shopper* March 2006. The C524n has a 100-sheet multipurpose feeder rather than the C522n's single-sheet slot, has a higher duty-cycle and accepts higher capacity toners. Sadly, both printers ship with the same measly 1,500-page starter toners.

Lexmark's installation program encountered problems when creating a "Lexmark-enhanced TCP/IP port" on our notebook. We had to create a standard TCP/IP port and assign the printer to it manually.

The C524n is an upright printer and takes up less space than most of the other single-pass devices. Its fans were among the noisiest in this group, and even in Power Save mode it occasionally ran a powerful-sounding motor.

Along with HP's LaserJet 3600n, the C524n has the most basic paper input of this group. A 100-sheet multipurpose tray is built neatly into the front of its 250-sheet paper cassette, but the cassette protrudes from the rear of the shallow printer, leaving the paper stack open to dust. An optional 500-sheet paper cassette gives the C524n a maximum combined input of 850 sheets. Duplex printing is available only on the C524dn model and can't be retro-fitted to the C524n. It creased envelopes in our test.

The C524n is the most affordable printer in this group to print at 1,200 dots per inch (dpi). Although it isn't particularly fast, we were impressed with its high print quality. Black text was free from jaggedness and photos printed with great fine detailing and accurate colours.

Colour graphics were particularly good when printed with the PostScript driver, which rendered grey and colour text with impressively smooth outlines. PostScript printing was only marginally slower than the PCL times given in our table on page 102.

VERDICT

The C524n is a quicker colour printer than the C522 and is a little cheaper to run, but it costs over £100 more to buy. Epson's C2600n is faster in mono, only marginally slower in colour and has lower running costs.

SUMMARY

- ✓ High print quality
- ✗ Not especially fast
- ✗ Supplied with low-capacity toners

COLOUR LASER PRINTER 1,200x1,200dpi, 20ppm mono/colour maximum speed, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE 0022B0061
SUPPLIER www.dabs.com
DETAILS www.lexmark.co.uk



OKI C5450N

★★★

£511 inc VAT

The C5450N uses no fewer than 10 separate consumables. These are all shipped in place, but you have to lift the toner and drums out to remove packing materials before you can use the printer.

Oki's installation program failed to detect the C5450N over our test network, but we used the display panel to confirm that the printer had leased an IP address. We entered this into the installer, which subsequently found the printer and completed the process successfully. There's no option to install both PCL and PostScript drivers at once and we had to repeat part of the installation process to set up PostScript printing.

This printer is one of three in the group with a 250-sheet input cassette. This can be a nuisance in a busy office or workgroup, as it isn't possible simply to drop in a fresh ream of paper every 500 pages. It is the only printer in this group with a face-up output tray, though, and this holds a generous 100 sheets. It printed envelopes perfectly.

Few printers in this test got close to their rated speed when printing in colour, but the C5450N managed only 76 per cent of its rated speed when printing in black and white. It was quite fast when printing our mixed-colour test using the PCL driver, but managed only 5.8 pages per minute (ppm) printing the same test with PostScript.

Under magnification, printed text had slightly stepped outlines, but it looked fine to the naked eye. This printer's graphical output was poor, however. When printed with the PCL driver, many test photographs had a subtle lilac cast. The PostScript results were better, but photos had a warm yellow/brown tint. Both sets of prints seemed grainier than those from the other printers here.

VERDICT

This printer is complex to maintain, with four toners and four drums that need replacing after different page yields. It's moderately expensive to run, and doesn't have the high speed or quality to compensate.

SUMMARY

- ✓ Swift colour printing
- ✗ Poor colour print quality
- ✗ Complex to maintain

COLOUR LED PRINTER 1,200x600dpi, 24ppm mono/16ppm colour maximum speed, parallel, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE 01161801
SUPPLIER www.savastore.com
DETAILS www.oki.co.uk



HP LaserJet 3600n

★★

£590 inc VAT

Many printers in this group proved tricky to set up, but the LaserJet 3600n was an exception. Its four toners incorporate imaging drums and are the printer's only consumables. They're shipped in place, but you must lift each out to remove a plastic cap before you can print.

We often complain about the installation software for HP's inkjet printers, but the LaserJet's simple and fast installer is easily the best here. It quickly found the printer on our network and offered us a choice of Full, Basic and Custom installations. It gave us the option to add a name and location and asked if we wanted to print a test page. We were left wondering why other laser printers, or indeed HP's inkjets, aren't as simple.

The 3600n is the most expensive printer with a 250-sheet input cassette in this group. It's one of two host-based printers and its basic driver has few quality settings. Its single-pass engine has the lowest mono speed rating here and its colour speed of 17ppm is the third lowest. It was faster than printers with higher quoted speeds in our colour test, though, running at an above-average 11.4ppm.

The 3600n printed crisp text, but under magnification we could see jaggedness in curved characters. Colour graphics and photos in our PDF test documents were reproduced well, but our high-resolution test photos lacked contrast in dark regions and looked washed out.

Grey and coloured text in our mixed-colour test had slightly soft outlines. Under magnification, it was clear that the component colours weren't aligned perfectly on the page. The printer's automatic calibration routine didn't seem to improve things. Using the driver's Edge Control option produced sharper results, but with it set to Light our mixed-colour document printed at just 3.2ppm.

VERDICT

The LaserJet 3600n is easy to set up and maintain, but it doesn't have the best print quality. Its ownership costs are reasonable, but with no print languages and a 250-sheet input cassette it feels basic for the price.

SUMMARY

- ✓ Reasonable running costs, especially in colour
- ✗ No print language support
- ✗ Slow and basic for the price

COLOUR LASER PRINTER 600x600dpi, 17ppm mono/colour maximum speed, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE Q7534A
SUPPLIER www.savastore.com
DETAILS www.hp.co.uk



LEXMARK C760n

★★

£670 inc VAT

Lexmark's C760n is the only printer in this group that ships on a wooden palette. When we unpacked it, we wondered if we'd received an A3 printer by mistake. It is larger even than Dell's huge 5100cn, and its sideways orientation makes it very imposing.

Even when unpacked the C760n weighs nearly 50kg, so lifting it is a job for two people. It's reasonably easy to set up, though. Like the HP LaserJet 3600n it uses four combined toner and photoconductor cartridges, and these arrive already fitted. Unlike Lexmark's C524n, we didn't experience significant problems with the C760n's installation program.

In our first colour prints with the C760n, colours seemed poorly aligned. This was most visible around the edges of solid colour fills where two or more colours didn't overlap fully, leading to visible cyan, magenta or yellow borders. The printer's alignment routine, which involves printing four pages and selecting the best matched patterns from each, fixed this.

The C760n's text looked sharp to the naked eye. However, as with many printers this month, outlines were a little soft when viewed through a magnifying glass. Selecting Best quality halves the printer's engine speed but increases the print resolution to 1,200dpi and gives prints a thick, lustrous finish. At this setting, the C760n produced the best colour graphics in this group.

The C760n did a great job with our test photographs, producing an impressive range of skin tones in one print. High-resolution photographs seemed too light and suffered from a magenta bias.

This printer's multipurpose feed is at the left, increasing the printer's space requirements further. Envelopes seemed to take an age to make their way through its cavernous interior, but they emerged uncrumpled.

VERDICT

Nothing about this printer's performance or specification explains its huge size, but it does produce good-quality results. Unfortunately, its high running costs make it hard to recommend.

SUMMARY

- ✓ Superb print quality in Best mode
- ✗ Slow warm-up, underwhelming speed
- ✗ Expensive to run

COLOUR LASER PRINTER 1,200x1,200dpi, 23ppm mono/colour maximum speed, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE 0017S0072
SUPPLIER <http://uk.insight.com>
DETAILS www.lexmark.co.uk



DELL Laser Printer 5100cn

★★★★★

£672 inc VAT



Next to Lexmark's monolithic C760n the Dell 5100cn looks almost compact, but it's still big and heavy. It's the most affordable of the two printers in the group with an automatic duplex unit and has the highest mono speed rating. The 5100cn's standard 650-sheet paper inputs can be upgraded to a whopping 2,150 sheets.

This printer needs a small amount of setting up. Before you can print, you need to remove packing material from the toners and paper drawers and drop in the heavy photoconductor unit. The 5100cn has a separate drum for each colour, but these are built into a single consumable with a life of up to 35,000 pages.

Unusually for a Dell printer, the 5100cn supports operating systems other than Windows. Its installation program made setup easy and was the only one here to offer a choice of mono-only, colour and password-protected colour installations. It couldn't detect the printer over our network, though, and we had to add a TCP/IP port for it manually.

Using the PCL driver, the 5100cn produced the quickest mono text in the group, outpacing even Epson's AcuLaser C2600n. We were less than impressed with the results, though, which were not solid black and appeared to contain diagonal dithering lines. Forcing the printer to print only in black fixed the problem, but it shouldn't be necessary to do this manually.

PCL graphics were also disappointing, with colours that were far off the mark. PostScript results were much better but took longer. The 5100cn is one of the fastest duplex printers we've tested, but we couldn't convince it to print envelopes with the correct orientation and it crumpled them badly.

VERDICT

The 5100cn has been around for some time and Dell is due to remove it from sale on 15th June. Its PCL quality and envelope printing could be better, but its upgradability and low running costs make it a great end-of-life buy.

SUMMARY

- ✓ Very fast
- ✓ Affordable for medium or heavy use
- ✗ Poor PCL print quality

COLOUR LASER PRINTER 1,200x1,200dpi, 35ppm mono/25ppm colour maximum speed, parallel, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE N/A
SUPPLIER Dell 08709 075818
DETAILS www.dell.co.uk



EPSON AcuLaser C4100

★★★★

£732 inc VAT

Epson's AcuLaser C4100 is smaller and has a lower engine speed than the Dell Laser Printer 5100cn, but its layout is similar. Like the 5100cn it has a standard automatic duplexer, but its paper input can only be upgraded to hold 1,600 pages. It's the only device here that can print using PCL but not PostScript. Epson sells a PostScript 3 upgrade ROM, but at £450 we can't imagine many people buying it.

The C4100 was just as hard to install as the AcuLaser C2600N. Its setup program searches for the printer on local ports only, so you have to cancel the detection routine, accept a default installation using a parallel port and create a TCP/IP printer port manually.

Our first colour prints from the C4100N suffered from alignment problems that were more noticeable than those from Lexmark's C760n. Fixing this problem required printing just one registration sheet, but we had to enter the results into a separate menu. Spotting the correct alignment for yellow toner against a white background can be hard, but Epson's system makes it easier than Lexmark's.

This printer recorded the fastest time we've seen in our mixed colour test and produced satisfactory results. Selecting Fine on the driver improved the quality slightly but decreased the output speed. Photos were printed with good fine detail, but they had a subtle magenta cast.

The C4100 printed slightly soft mono text and had a habit of pausing during long jobs to recalibrate itself. Its best time in our 50-page document test was just 71 per cent of its rated speed. Every other printer except the Oki C5450N managed around 90 per cent or more.

We were perplexed by the presence of two conflicting envelope alignments on the multipurpose tray. The driver has no envelope paper type and the C4100 crumpled them more severely than any other printer here.

VERDICT

This is an impressively fast colour printer and it has reasonable running costs. Dell's Laser Printer 5100cn costs much less to run, though, and is far quicker in mono.

SUMMARY

- ✓ Reasonable running costs
- ✓ Good paper handling except for envelopes
- ✗ Tricky to set up

COLOUR LASER PRINTER 1,200x1,200dpi, 24ppm mono/colour maximum speed, parallel, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE C11C538001BZ
SUPPLIER www.savastore.com
DETAILS www.epson.co.uk



KONICA MINOLTA Magicolor 5440DL

★★★★★

£759 inc VAT

This printer looks almost identical to the Magicolor 5430DL, which won a Best Buy award in February 2005. The 5430DL is now less than £400 including VAT. The 5440DL is significantly more expensive but has better paper handling and lower running costs. It's also more upgradable than the cheaper model and has a multipurpose feeder.

Konica Minolta's installation program is straightforward enough, but the 5440DL required a bit of setting up. It uses only four consumables, each of which combines toner and an imaging drum. These are shipped inside the printer but are held in place by screws that must be removed. The 100-sheet multipurpose feeder must also be installed.

The 5440DL sits on top of a 500-sheet paper cassette, but between jobs the printer has a habit of leaving a single sheet of paper under its pinch roller. This sheet can easily get creased when you need to add more paper or re-feed a stack when duplexing manually. Using the printer's multipurpose feed tray requires extra space on its right-hand side.

This printer has a higher speed rating than the 5430DL and delivered over four more pages of mono text per minute in our tests. We were surprised that it didn't improve on the 5430DL's speeds in our colour tests, though. This suggests that the limiting factor is the driver's spooling time rather than the printer's engine. Print quality was fine. Our standard photo tests seemed a little rosy, but the 5440DL produced the best black-and-white photo in this group.

A Konica Minolta promotion that runs until 30th June means the 5440DL comes with a three-year onsite warranty. Anyone buying the printer can also choose between a free automatic duplex unit, a second 500-sheet paper cassette or a half-price Magicolor 2480MF colour laser multifunction peripheral.

VERDICT

The 5440DL is a capable printer, but has no print language support. It would normally be expensive, but with Konica Minolta's spring promotion it's reasonably good value.

SUMMARY

- ✓ Great all-rounder
- ✓ Special-offer warranty is the best here
- ✗ No print languages

COLOUR LASER PRINTER 600x600dpi, 25.6ppm mono/colour maximum speed, USB Hi-Speed, PictBridge USB and 10/100 Ethernet interfaces
PART CODE 5250224-200 SUPPLIER www.dabs.com
DETAILS www.konicaminoltaprinters.co.uk



RICOH Alficio CL3500N

★★★

£1,287 inc VAT (RRP)

Although *Shopper* has reviewed many Ricoh digital cameras, its printers are mostly sold to large companies. This month, though, we decided to take a look at Ricoh's Alficio CL3500N. Its recommended retail price is significantly higher than most here, but you should be able to find it on sale for far less.

The CL3500N's consumables must be inserted before it can begin printing. The printer's four toners slot into a compartment at the top. Its four 15,000-page photoconductor drums are supplied in two units. One holds the black drum and the other contains drums for the cyan, magenta and yellow colours. These slot into a panel on the right, but it's too easy to touch the exposed drum surfaces when fitting them. Heavy users may need to replace the waste toner bottle at 56,000 pages, and the fuser and transfer roller units need replacing after 100,000 pages.

The CL3500N's engine speed is modest for the price, but in our mono tests it came closer than any other printer to matching these rated speeds. Only the LaserJet 3600n was quicker to start printing from its Power Save mode. Colour prints made with the PCL driver were too dark, though, and colour printing was slow.

Every other PostScript-capable printer produced faster results when using a PCL print driver, but the CL3500N was faster using PostScript. It managed a decent 10.4ppm in our mixed colour test and completed each of our photo tests at 1,200dpi in less than two minutes. Its PostScript print quality was uniformly excellent, with the best grey and colour text outlines in the group.

VERDICT

The CL3500N is the best PostScript printer here, but it is expensive to buy and pricy to run. However, we expect that it will be sold for less than £1,000 and that consumables will drop in price when they become more widely available. If its price were to drop to below £900 including VAT, the CL3500N would be worth three stars, but at the recommended retail price it's a poor buy.

SUMMARY

- ✓ Excellent PostScript print quality
- ✗ Extremely expensive
- ✗ Slow PCL colour printing

COLOUR LASER PRINTER 1,200x1,200dpi, 21ppm mono/colour maximum speed, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE CL3500N
SUPPLIER www.dabs.com
DETAILS www.ricoh.co.uk



COLOUR LASERS

	★ BEST BUY					★ BEST BUY			
MANUFACTURER	EPSON	LEXMARK	OKI	HP	LEXMARK	DELL	EPSON	KONICA MINOLTA	RICOH
Model	AcuLaser C2600N	C524n	C5450n	LaserJet 3600n	C760n	Laser Printer 5100cn	AcuLaser C4100	Magicolor 5440DL	Alficio CL3500N
Rating	★★★★★	★★★	★★	★★	★★	★★★★★	★★★	★★★★	★★
QUOTED SPEEDS									
Quoted speed, mono A4	30ppm	20ppm	24ppm	17ppm	23ppm	35ppm	24ppm	25.6ppm	21ppm
Quoted speed, colour A4	7.5ppm	20ppm	16ppm	17ppm	23ppm	25ppm	24ppm	25.6ppm	21ppm
Quoted warm-up time	Not stated	1m 30s	1m 30s	0s	2m 40s	Not stated	30s	35s	30s
Quoted time to first page, mono	9.3s	13s	9s	14s	13s	10.5s	13s	14s	13.5s
Quoted time to first page, colour	15.3s	13s	13s	14s	15s	12.5s	13s	14s	14.5s
Total quoted time to first print, mono	Not stated	1m 43s	1m 39s	14s	2m 53s	Not stated	43s	49s	43.5s
Total quoted time to first print, colour	Not stated	1m 43s	1m 43s	14s	2m 55s	Not stated	43s	49s	44.5s
TESTED SPEEDS									
First mono page from sleep	1m 06s	2m 02s	1m 18s	21.5s	2m 25s	35.5s	34s	32s	27s
First colour page from sleep	1m 09s	1m 17s	1m 10s	20.5s	2m 24s	26.5s	29s	30.5s	25.5s
Test 1, 50-page text document	1m 53s (26.5ppm)	2m 49s (17.8ppm)	2m 44s (18.3ppm)	3m 18s (15.2ppm)	2m 33s (19.6ppm)	1m 40s (30.0ppm)	2m 54s (17.2ppm)	2m 10s (23.1ppm)	2m 36s (19.2ppm)
Test 1, duplex, 50-page text document	N/A	N/A	N/A	N/A	N/A	2m 37s (19.1ppm)	4m 24s (11.4ppm)	N/A	N/A
Test 2, letter, time to first page	11s	14s	20.5s	19.5s	13.5s	13s	16.5s	16s	13s
Test 2, letter, total time for 50 copies	1m 49s (27.5ppm)	2m 47s (18.0ppm)	2m 47s (18.0ppm)	3m 09s (15.9ppm)	2m 20s (21.4ppm)	1m 37s (30.9ppm)	2m 57s (16.9ppm)	2m 17s (21.9ppm)	2m 32s (19.7ppm)
Test 3, mixed colour	3m 29s (6.9ppm)	2m 46s (8.7ppm)	2m 14s (10.7ppm)	2m 06s (11.4ppm)	2m 32s (9.5ppm)	1m 50s (13.1ppm)	1m 17s (18.7ppm)	1m 37s (14.8ppm)	3m 31s (6.8ppm)
Test 4, 10x8" photos	38.5s	1m 05s	33s	39s	1m 04s	3m 10s	36.5s	33s	4m 30s
Test 5, 6x4" photos	47s	1m 21s	53s	52.5s	1m 06s	2m 50s	54.5s	42s	4m 54s
PRINT QUALITY									
Maximum resolution	600x600dpi	1,200x1,200dpi	1,200x600dpi	600x600dpi	1,200x1,200dpi	1,200x1,200dpi	1,200x1,200dpi	600x600dpi	1,200x1,200dp
PHYSICAL AND ENVIRONMENTAL									
Standard interfaces	Parallel, USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed, 10/100 Ethernet	Parallel, USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed, 10/100 Ethernet	Parallel, USB Hi-Speed, 10/100 Ethernet	Parallel, USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed, 10/100 Ethernet, PictBridge USB	USB Hi-Speed, 10/100 Ethernet
Optional interfaces	None	None	None	None	802.11g wireless Ethernet	None	None	None	Parallel, Bluetooth, 802.11b wireless Ethernet
Dimensions (HxWxD)	425x431x518mm	484x440x408mm	342x400x528mm	400x400x450mm	528x604x470mm	462x427x582mm	445x439x638mm	440x455x520mm	398x419x536mm
Weight	34.3kg	26kg	20kg (without consumables)	27.1kg	47.7kg	35kg	35kg	37kg	32kg
Noise	56dB(A)	51dB(A)	54dB(A)	49dB(A)	52dB(A)	69.5dB(A)	55dB(A)	54dB(A)	63dB(A)
Duty cycle (sheets per month)	120,000 mono/48,000 colour	65,000	50,000	50,000	70,000	90,000	100,000	60,000	50,000
Power consumption printing	900W max	350W average	950W max, 420W average	337W max	650W average	580W average	900W max, 600W average	1,250W max	1,200W max
Power consumption sleep mode	12W	18W	35W	15W	30W	45W	45W	43W	10W
PAPER HANDLING									
Maximum paper size	A4	A4/legal, length up to 355mm	A4/legal, length up to 1.2m	A4/legal, length up to 356mm	A4/legal, length up to 355mm	A4/legal, length up to 355mm	A4/legal, length up to 355mm	A4/legal, length up to 356mm	A4/legal, length up to 356mm
Maximum paper weight	163gsm	218gsm	203gsm	220gsm	218gsm	216gsm	216gsm	210gsm	199gsm
Standard paper inputs (capacity)	2 (650)	2 (350)	2 (400)	2 (350)	2 (600)	2 (650)	2 (600)	2 (600)	2 (630)
Maximum paper inputs (capacity)	3 (1,150)	3 (750)	3 (930)	3 (850)	3 (1,100)	4 (2,150)	3 (1,600)	4 (1,600)	4 (1,690)
Output tray capacity	250 sheets	250 sheets	250 sheets + 100 sheets face-up	250 sheets	250 sheets	300 sheets	250 sheets	250 sheets	250 sheets
Duplex	C12C802221, £162	N/A (only on new)	42158412, £139	N/A	0016N2400, £437	Yes	Yes	1710579-100 (currently free option in spring offer)	AD440 duplex unit £210
GENERAL									
Technology	Four-pass colour laser	Single-pass colour laser	Single-pass colour LED	Single-pass colour laser	Single-pass colour laser	Single-pass colour laser	Single-pass colour laser	Single-pass colour laser	Single-pass colour laser
Language(s)	PCL5c, PCL6, PostScript 3, ESC/Page, ESC/P2, FX, IBM Mode 1239X	PCL5c, PCL6, PostScript 3, PDF 1.5 (backward compatible)	PCL5c, PostScript 3, Epson FX/IBM ProPrinter emulations	Host-based	PCL6, PostScript 3, PDF 1.2, PDF 1.3	PCL5c, PCL6, PostScript 3	PCL5c, ESC/Page, ESC/P2, IBM Mode 1239X, Epson GL/2	Host-based	PCL5c, PCL6, PostScript 3, RPCS, P/L
Supported operating systems	Windows 98/Me/NT/2000/XP/Server 2003, Mac OS 9.X, OS 10.1.2 or later	Windows 95/98/Me/NT/2000/XP/Server 2003, Mac OS 9.X, OS 10.2 or later, various Linux and Novell versions	Windows 95/98/Me/NT/2000/XP, Citrix Metaframe, Mac OS 8.6 or later, Mac OS 9, Mac OS X, various Linux and Novell versions	Windows 98/Me/2000/XP/Server 2003, Mac OS X 10.2, 10.3 or 10.4	Windows 98/Me/NT/2000/XP, Citrix Metaframe, Mac OS 8.6-9.X, OS X, various Linux and Novell versions	Windows 98/Me/NT/2000/XP, Mac OS 9.2.2, OS X 10.2.8, OS X 10.3.2, various UNIX/Linux, Novell NetWare	Windows 98/Me/2000/XP, Mac OS 8.1 or later	Windows 98 SE/Me/NT/2000/XP/Server 2003, Mac OS X 10.2 or later, Linux	Windows 95/98/Me/NT/2000/XP/Server 2003, Mac OS 8.6-9.2x, OS X 10.1 or later, UNIX
Memory, standard (max)	64MB (512MB)	128MB (640MB)	128MB (320MB)	64MB (64MB)	128MB (512MB)	128MB (640MB)	64MB (1,024MB)	64MB (576MB)	128MB (512MB)
Other features and options	40GB hard disk C12C824172, £434, three-year onsite warranty upgrade ECPGRP50, £169	N8050 802.11g wireless Ethernet interface, £557, three-year warranty upgrade, £255, various installation/trade-in/training options	Cabinet 09004107, £145	None	Three-year warranty upgrade, £255	20GB hard disk £105, onsite installation £58, two-year (£217), three-year (£306), four-year (£394) or five-year (£470) extended warranty	PostScript 3 kit C12C832571, £451, 20GB hard disk C12C824061, £399, three-year warranty upgrade ECPGRP80, £499	Cabinet 1710601-100, £181, Camera Direct photo print card 22600773-100	Printer hard disk type 3000 (10GB)
PRICE AND WARRANTY									
Street price including VAT	£472	£482	£511	£590	£670	£672	£732	£759	£1,287 (RRP)
Price per mono A4 page including VAT	1.11p	1.54p	1.36p	1.27p	1.31p	0.67p	0.99p	1.20p	1.41p
Price per colour A4 page including VAT	6.43p	6.96p	7.50p	5.65p	6.87p	4.74p	6.72p	6.06p	7.40p
Price second paper cassette including VAT	500-sheet C12C802211, £144	500-sheet 001882100, £206	530-sheet 42158512, £166	500-sheet Q5985A, £277	500-sheet 0016N2300, £286	500-sheet £199, 1,000-sheet £328	500-sheet C12C802061, £278, 1,000-sheet C12C802071, £705	500-sheet feeder unit 1710578-100 (currently free option in spring offer)	Not stated
Capacity of supplied black toner (pages)	5,000	1,500	3,000	6,000	3,000	9,000	10,000	3,000	2,500
Capacity of supplied colour toners (pages)	2,000	1,500	3,000	4,000	3,000	8,000	8,000	3,000	2,500
Capacity of supplied drum/s (pages)	40,000 mono/10,000 colour	20,000	17,000	Replaced with toners	Replaced with toners	35,000	30,000	Replaced with toners	15,000
Estimated total ownership cost, three years' light use*	£472	£596	£511	£590	£670	£672	£732	£759	£1,287
Estimated total ownership cost, three years' medium use**	£1,267	£1,484	£1,287	£1,271	£1,741	£1,075	£1,251	£1,740	£2,069
Estimated total ownership cost, three years' heavy use***	£3,604	£3,960	£4,037	£3,540	£4,131	£2,676	£3,500	£3,740	£4,409
Warranty duration and terms	One year onsite	One year next business day onsite	One year onsite	One year next day onsite	One year onsite	One year next business day onsite	One year onsite	One year onsite (three years included in spring offer)	One year onsite
Supplier	www.savastore.com	www.dabs.com	www.savastore.com	www.savastore.com	http://uk.insight.com	Dell 0870 907 5818	www.savastore.com	www.dabs.com	www.dabs.com
Details	www.epson.co.uk	www.lexmark.co.uk	www.oki.co.uk	www.hp.co.uk	www.lexmark.co.uk	www.dell.co.uk	www.epson.co.uk	www.konicaminolta.com	www.ricoh.co.uk
Manufacturer part code	C11CS85001DA	002280061	01161801	Q7534A	001750072	N/A	C11C538001BZ	5250224-200	CL3500N

*Light use = 2,400 mono and 1,200 colour pages **Medium use = 18,000 mono and 9,000 colour pages ***Heavy use = 72,000 mono and 36,000 colour pages

Labs verdict Colour laser printers

Running costs are arguably the single most important factor when buying a workgroup colour laser printer, so we were surprised that many of the printers were not much cheaper to run than budget colour lasers. Dell's Laser Printer 5100cn is an exception. It produced the quickest mono text here and good graphics in PostScript mode. Its running costs offer significant savings. It

wins a Best Buy award, but you'll need to grab one fast as it's due to be discontinued.

If your print needs are more modest, we recommend Epson's AcuLaser C2600N. It's tricky to set up and its PostScript results are poor, but it produces great results with its PCL driver and is very fast in mono. At £472 including VAT, it's also the cheapest printer here. It wins a Best Buy award. **CS**



EPSON
AcuLaser C2600N
★★★★★



DELL
Laser Printer 5100cn
★★★★★

